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Before the Committee on Transportation and
Infrastructure
U.S. House of Representatives

Hearing on The Safety of Hazardous Liquid Pipelines:
Regulated vs. Unregulated Pipelines

June 29, 2010

Good afternoon and thank you for inviting me to testify today. My name is Lois Epstein and I am an Alaska- and Maryland-licensed engineer who serves as an oil and gas consultant to non-profit organizations. My background in pipeline safety includes membership from 1995-2007 on the U.S. Department of Transportation's Technical Hazardous Liquid Pipeline Safety Standards Committee which oversees the Pipeline and Hazardous Materials Safety Administration's (PHMSA's) oil pipeline activities and rule development, testifying before Congress in 1999, 2002, 2004, and 2006 on pipeline safety, and researching and analyzing the performance of Cook Inlet's 1000+ miles of pipeline infrastructure by pipeline operator and type.¹ I have worked on environmental and safety issues for over 25 years for three private consultants, the U.S. Environmental Protection Agency, Environmental Defense Fund, and Cook Inletkeeper.

Currently, I am a consultant for the Pipeline Safety Trust located in Bellingham, Washington, and my testimony today reflects the Trust's views. The Trust came into being after the 1999 Olympic Pipe Line tragedy in Bellingham which left three young people dead, wiped out every living thing in a beautiful salmon stream, and caused millions of dollars of economic disruption to the region. After investigating this tragedy, the U.S. Department of Justice (DOJ) recognized the need for an independent organization which would provide informed comment and advice to pipeline companies, government regulators, and the public with a clearinghouse of pipeline safety information. The federal trial court agreed with DOJ's recommendation and awarded the Pipeline Safety Trust \$4 million that was used as an initial endowment for the long-term continuation of the Trust's mission.

PHMSA Regulatory Background and Context

PHMSA regulation of pipelines has progressed greatly in the past decade largely as a result of the work of Chairman Oberstar and this committee as well as other committees which provided vigorous oversight and statutory direction in the wake of several tragic accidents. Of particular significance were the 1999 Bellingham gasoline pipeline accident that killed three youths, the 2000 Carlsbad natural gas pipeline accident which killed twelve, and the costly 2006 BP pipeline releases on Alaska's North Slope which came from unregulated, rural, low-stress² crude oil pipelines. The first two accidents resulted in PHMSA's integrity management requirements.³ The Alaska releases resulted in PHMSA finally proposing – last week – the second and final phase of a Congressional mandate issued in 2006⁴ to address unregulated, rural, low-stress pipelines. This mandate followed a 1988 resolution (22 years ago!) by the National Association of Pipeline Safety

¹ *Lurking Below: Oil and Gas Pipeline Problems in the Cook Inlet Watershed*, Lois Epstein, Cook Inletkeeper, 2002, 28 pp. plus appendices, and follow-up reports in 2003 and 2005. [See www.inletkeeper.org/pipelines.htm](http://www.inletkeeper.org/pipelines.htm).

² “Low-stress pipeline means a hazardous liquid pipeline that is operated in its entirety at a stress level of 20 percent or less of the specified minimum yield strength of the line pipe.” (49 CFR 195.2)

³ See 49 CFR 195.452 (for hazardous liquids) and 49 CFR 192 Subpart O (for natural gas).

⁴ See 49 USC 60102(k).

Representatives (state pipeline regulators) to the U.S. DOT asking that the low-pressure exemption be eliminated.⁵ While the Pipeline Safety Trust is pleased with the issuance of the Phase 2 rule, it took far too long for it to be developed especially since the 2006 Congressional mandate to utilize existing standards to cover these pipelines was extremely simple to implement. Additionally and despite the clear Congressional mandate, PHMSA decided not to utilize all existing standards and instead promulgated a less technically-justifiable applicability threshold (1/2 mile from an Unusually Sensitive Area rather than “could affect” an Unusually Sensitive Area) for both the Phase 1 and Phase 2 rules.

What is problematic about PHMSA’s history and ominous for the future is the reactive nature of its regulatory actions and the at-times overly-narrow and inconsistent nature of its regulations. Because PHMSA is so slow at issuing regulations, during the 2002 reauthorization Congress went so far as to include statutory backstops requiring industry to adopt certain practices and standards in the event PHMSA did not issue rules in a timely manner.

As the above discussion shows, PHMSA developed regulations only following extremely serious accidents and – in the instance of the low-stress rule - only after a very specific Congressional mandate that went beyond PHMSA’s previously proposed rule.⁶ PHMSA, with its numerous pipeline specialists, does not act pro-actively in preventing major pipeline problems, a circumstance not unlike the now-familiar situation with the Minerals Management Service. While it would be unwise to draw too many parallels between the two agencies, it is fair to say that the two are similar in having cultures that are close to the industries they regulate and that both are more than a bit uncomfortable with implementing and enforcing regulations that burden the industries whose fees and payments help fund the agencies.

Obviously, Congress does not have the expertise PHMSA staff has so it cannot – and should not – be specific about all pipeline regulatory needs. As a result, PHMSA needs to use the general rulemaking authority granted it by Congress⁷ more assertively than it has historically to ensure that it prevents future pipeline accidents.

To be clear, however, part of the regulatory oversight problem lies with the law, not with PHMSA. The pipeline safety statute is a relatively weak law from a regulatory

⁵ Resolution 1988-1-P1, 20 Percent SMYS, sent to U.S. DOT on August 4, 1988.

⁶ Note that PHMSA’s first attempt at a limited, proposed rule addressing rural, low-stress pipelines (see 71 FR 52504, September 6, 2006) was abandoned when Congress required that these lines be regulated similarly to other transmission lines through a mandate proposed in the Pipeline Inspection, Protection, Enforcement, and Safety Act of 2006, signed into law on December 29, 2006; see footnote 4 for the citation.

⁷ See 49 USC 60102 (b)(1). *Practicability and Safety Needs Standards.* –

(1) *In general.* – A standard prescribed under subsection (a) shall be –

(A) *practicable; and*

(B) *designed to meet the need for –*

(i) *gas pipeline safety, or safely transporting hazardous liquids, as appropriate; and*

(ii) *protecting the environment.*

standpoint. Changes should be made to the statute's general provisions to enhance PHMSA's ability and mandate to protect the public and the environment. In particular, the language in 49 USC 60102(b) ties PHMSA's ability to regulate to an overly prescriptive, time-consuming, and industry-weighted risk assessment. The Trust recommends that: *Congress eliminate or modify 49 USC 60102(b) greatly to permit more effective regulation.* Other general changes include a greater statutory focus on environmental protection, and refinements to the definitions in 49 USC 60109 to ensure that pipelines in all areas that are environmentally sensitive to a pipeline accident – as well as fast-growing population areas - are covered by pipeline integrity management requirements.

Structure of the Testimony

In the rest of my testimony, I discuss pipelines that PHMSA should regulate to prevent future pipeline accidents. Some of these types of pipelines require statutory changes that give PHMSA clear regulatory authority over those lines. Other types can be addressed administratively – towards that end, it is the Pipeline Safety Trust's view that *PHMSA immediately should use its general rulemaking authority to require all pipelines within its jurisdictional authority but currently exempt from 49 CFR 195.1 to report releases.* This information could be used by PHMSA in the future to address those pipelines with the likelihood of releases that could significantly impact the economy, the public, and/or the environment.

Near the end of my testimony, I discuss two longstanding, important deficiencies in PHMSA's transmission line regulation.

Key Unregulated Hazardous Liquid Pipelines

Gathering Lines:

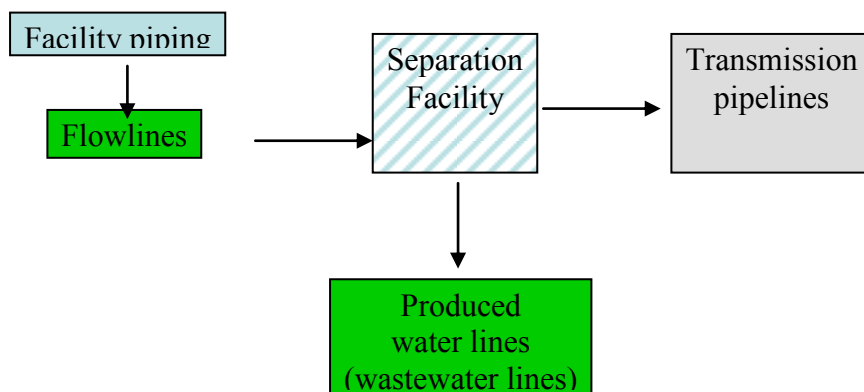
Both Congress and PHMSA are responsible for PHMSA's extremely limited regulation of so-called "gathering" lines, a confusing term with no "universal definition"⁸ and a term that the State of Alaska, since 2006, does not use in regulating pipelines. In Alaska all pipelines that are not facility piping or well-based lines now either are regulated flowlines or transmission pipelines⁹ (see Figure 1).

The 1992 federal pipeline safety law reauthorization required the Office of Pipeline Safety in 49 USC 60101(b) to define the term "gathering line" and "regulated gathering line" but Congress limited PHMSA's discretion in these definitions. As a result, OPS produced a gathering line definition that includes pipeline diameter but it is not clear where gathering lines end and transmission lines begin; pipeline diameter, contents, and operations are similar for both. Given that, one would think that PHMSA has sufficient technical justification to regulate these similar lines in a similar fashion. Nevertheless, in its 2008 rule covering rural onshore hazardous liquid gathering lines, PHMSA cited the

⁸ See 73 FR 31634, June 3, 2008.

⁹ See 18 AAC 75.

Figure 1 Alaska Terminology for Oil Pipelines



As of 2006, pipelines in green boxes are regulated “flow lines”

“Gathering line” term eliminated – former gathering lines either are regulated as flowlines or transmission pipelines in Alaska

PHMSA REGULATES ONLY TRANSMISSION PIPELINES!

House Energy and Commerce Committee report on H.R. 1489, a bill that led to the Pipeline Safety Act of 1992, to justify limiting the scope and contents of its regulation of gathering lines. That report says, “DOT should find out whether any gathering lines present a risk to people or the environment, and if so how large a risk and what measures should be taken to mitigate the risk.”¹⁰ In the Pipeline Safety Trust’s view, this statement can be interpreted as requiring comprehensive regulation of gathering lines if technical reasons exist to do so. PHMSA, in contrast, stated in 2008 that in its view, “Congress wanted to limit “regulated gathering lines” to lines posing a significant risk.”¹¹ Moreover, even when PHMSA did decide to regulate rural onshore hazardous liquid gathering lines in 2008, it did so by imposing only selective standards on those lines, a technically-unjustifiable decision opposed by the National Transportation Safety Board (NTSB) in its November 21, 2006 comments on the proposed rule.

The Pipeline Safety Trust believes that Congress should require PHMSA to regulate post-oil/water/gas gathering lines as transmission lines to prevent releases from

¹⁰ See H.R. Report No. 102-247-Part1, 102d Congress, 1st Session, 23 (1991).

¹¹ See 73 FR 31635, June 3, 2008.

these pipelines. NTSB's testimony before the Senate Commerce Committee on June 24, 2010¹² supports this position.

The Trust's view is that: *it no longer is 1992, and transmission pipelines have been more fully regulated to prevent releases since then. Now is the time for Congress to stop unwarranted special treatment by PHMSA for hazardous liquid gathering lines. Congress should eliminate 49 USC 60101(b) and require PHMSA to regulate gathering lines like transmission lines.*

The benefits of fully regulating gathering lines under 49 CFR 195 would include reduced disruptions in fuel supply caused by pipeline failures and reduced adverse human and environmental impacts. Because gathering lines currently are unregulated by PHMSA and incidents are not required to be reported to U.S. DOT, the full benefits of such a rulemaking cannot be quantified at this time.

Flowlines:

Because it does not believe it has jurisdictional authority from Congress to regulate production facilities which includes all facilities upstream of oil/gas/water separation facilities, PHMSA does not regulate flowlines. Flowlines are multi-phase (i.e., oil/gas/water) pipelines that take materials from wells to separation facilities. Particularly in the early part of winter, Alaska commonly has releases from these unregulated pipelines. State regulation of these pipelines alone has not stopped these spills – the Trust believes due to a lack of enforcement by a state with a built-in conflict of interest due to the revenue it receives from drilling leases and crude oil transportation through the Trans-Alaska Pipeline System. On November 29, 2009, for example, BP had a release of approximately 46,000 gallons from an 18 inch flowline. The rupture in the line was approximately two feet in length and likely caused by ice formation.

The Trust's position is that: *Congress needs to require PHMSA to regulate flowlines from wells to separation facilities under 49 CFR 195 rules by a date certain to prevent future pipeline releases from these lines.*

Produced Water Lines:

Following separation of oil, gas, and water during crude oil production, produced water lines typically carry briny water contaminated with oil to injection wells for disposal. These produced water lines can and do fail in manners similar to other pipelines that PHMSA regulates. For example, on Christmas Day in 2008 at the ConocoPhillips Kuparuk oil field on Alaska's North Slope, a corroded pipeline released nearly 100,000 gallons of produced water which can be toxic to plants and wildlife.

¹² "The NTSB states its belief that the standards codified in Title 49 Code of Federal Regulations, Part 195 for hazardous liquid pipelines should also apply in its (sic) entirety to the low-stress pipelines and *gathering lines*." (emphasis added) Testimony of NTSB Chairman Deborah A.P. Hersman before the U.S. Senate Subcommittee on Surface Transportation and Merchant Marine Infrastructure, Safety, and Security, Committee on Commerce, Science, and Transportation, June 24, 2010.

Drilling for natural gas in shale and coal formations has grown enormously in recent years and results in large quantities of produced water. Some of this drilling occurs in populated areas, for example in Fort Worth, Texas there are approximately 1,000 gas wells within the city limits with many more planned. Produced water pipelines carry briny, contaminated water - which many would consider a hazardous liquid - to wells or surface disposal facilities including evaporation ponds.

The Trust's position is that: *Congress needs to require PHMSA to regulate produced water lines under 49 CFR 195 rules by a date certain to prevent future pipeline releases from these lines.* Because these pipelines follow multi-phase separation operations, the Trust believes that PHMSA can regulate these lines under current federal law, however it is unlikely it would do so without an explicit mandate and timetable from Congress.

Key Transmission Pipeline Regulatory Deficiencies

As I discussed in my April 27, 2006 pipeline safety testimony to the House Subcommittee on Energy and Air Quality of the Energy and Commerce Committee, there are significant problems in how PHMSA addressed two important regulatory issues:

- Hazardous liquid pipeline shut-off valve location and performance standards, and
- Leak detection system performance standards.

Shut-off Valves:

In 1992, 1996, 2002, and 2006, Congress required OPS to “survey and assess the effectiveness of emergency flow restricting devices...to detect and locate hazardous liquid pipeline ruptures and minimize product releases”¹³ with the first such requirement having a deadline in 1994 (16 years ago!). Following this analysis, Congress required OPS to “prescribe regulations on the circumstances under which an operator of a hazardous liquid pipeline facility must use an emergency flow restricting device.”¹⁴ (emphasis added)

OPS/PHMSA never issued a formal analysis on emergency flow restricting device (EFRD) effectiveness. Instead, in its hazardous liquid pipeline integrity management rule,¹⁵ OPS rejected the comments of the NTSB, the U.S. Environmental Protection Agency, the Lower Colorado River Authority, the City of Austin, and Environmental Defense and chose to leave EFRD decisions up to pipeline operators after listing in the rule various criteria for operators to consider. Such an approach to EFRD use does not appear to meet Congressional intent, partly because the approach is essentially unenforceable - again, echoes of Minerals Management Services' problems - and not protective of

¹³ See 49 USC 60102(j)(1).

¹⁴ See 49 USC 60102(j)(2).

¹⁵ See 49 CFR 195.452(i)(4).

important environmental assets such as rivers and lakes including those not considered High Consequence Areas.

The Trust's position is that: *Congress needs to reiterate its previous mandates to PHMSA on EFRD use and ensure they are followed to mitigate the extent of future pipeline releases.*

Leak Detection Systems:

In its hazardous liquid transmission pipeline integrity management rule, PHMSA requires that operators have a means to detect leaks, but there are no performance standards for such a system.¹⁶ This is in contrast to the State of Alaska, for example, which requires that *all* crude oil transmission pipelines have a leak detection system capable of promptly detecting a leak of no more than 1% of daily throughput.¹⁷ Similar to the situation for EFRD use, PHMSA listed in the integrity management rule various criteria for operators to consider when selecting such a device. Again, such an approach is virtually unenforceable and not protective of important environmental assets such as rivers and lakes including those not considered High Consequence Areas.

The recent Chevron pipeline release near Salt Lake City earlier this month is an example of what can go wrong when a pipeline with a leak detection system has no performance standards for operations. Attachment 1 from the Salt Lake City Tribune on June 16, 2010 shows that the pipeline operator and PHMSA cannot estimate the volume of the leak and the leak detection system did not identify the source location of the leak. Additionally, the article notes that the leak detection system did not work well on the downhill side of a topographic grade.

The Trust's position is that: *Congress needs to direct PHMSA to issue performance standards for leak detection systems used by hazardous liquid pipeline operators by a date certain to prevent damage from future pipeline releases.*

Conclusion

Hazardous liquid pipeline releases can have serious, adverse public, environmental, and economic consequences. These consequences can nearly be eliminated – and certainly can be significantly reduced – with adequate federal pipeline safety requirements (and adequate enforcement, but that is a topic for another day). Investing in pipeline safety as a nation pays off over the long-term.

Key recommendations to Congress contained in this testimony:

- *Eliminate or modify the risk assessment provisions of 49 USC 60102(b) greatly to permit more effective PHMSA regulation;*
- *Eliminate 49 USC 60101(b) and require PHMSA to regulate post-separation facility gathering lines like transmission lines;*

¹⁶ See 49 CFR 195.452(i)(3).

¹⁷ See 18 AAC 75.055(a)(1).

- *Require PHMSA to regulate flowlines from wells to separation facilities under 49 CFR 195 rules by a date certain;*
- *Require PHMSA to regulate produced water lines under 49 CFR 195 rules by a date certain;*
- *Reiterate previous mandates to PHMSA on shut-off valve use and ensure they are followed; and,*
- *Direct PHMSA to issue performance standards for leak detection systems by a date certain*

Key recommendation to PHMSA contained in this testimony:

- *Require all pipelines within PHMSA's jurisdictional authority but currently exempt from 49 CFR 195.1 to report releases.*

Thank you very much for your attention to these important pipeline safety issues.

The Salt Lake Tribune

Leak stopped, but pipeline questions still flowing

By Steven Oberbeck and Rosemary Winters

The Salt Lake Tribune

<http://www.sltrib.com/sltrib/home/49753453-73/leak-pipeline-chevron-oil.html.csp>

June 16, 2010 08:53PM

By Saturday evening, the oil flowing out of Chevron's busted Crude Oil Pipeline No. 2 was down to around five gallons a minute, a trickle compared with the 50 gallons a minute that were reported to be spilling earlier in the day.

What remained a mystery: When did the leak begin? And why, with monitoring equipment in place on the pipeline, did it apparently take hours to learn of the break?

"We will get to the bottom of how this happened," Salt Lake City Mayor Ralph Becker said. "And we will address necessary measures to make sure the community continues to be protected in the future."

An early report from city officials indicated the initial leak took place about 10 p.m. Friday. But that report later was withdrawn and blamed on miscommunication between Chevron and the city.

"We do not know yet when the leak first happened," said Dan Johnson, a spokesman for Chevron Corp. "Our first and most important priority was to get the leak stopped and the damage contained."

Without knowing when the leak started, though, any estimate of



Photo by Leah Hogsten | The Salt Lake Tribune
Cleanup crews and hazmat units try to suck up the spill. A Chevron pipeline leak early Saturday morning flowed into Red Butte Creek, leading to the closure of Liberty Park. Contaminants were spotted as far away as the Jordan River in what officials are calling a "major" spill. The source of the leak is near the greenhouse of Red Butte Gardens, below the actual garden property.

the actual size of the spill remains just that, said Becker's spokeswoman, Lisa Harrison Smith. Still, Fire Department Deputy Chief Karl Lieb estimated 500 barrels (about 21,000 gallons) of oil escaped.

The residual leakage represented the crude that remained in the 10-inch pipeline after it was shut down. The valve used to stop the flow — soon after Chevron learned of the leak at 7:42 a.m. Saturday — was about seven miles east of the break.

"Our pipeline-monitoring system was active but did not identify the source of the leak," company spokesman Mark Sullivan said. "Our investigation will examine that and report on the findings."

He said the company would assume full responsibility for any "financial damage, environmental damage, safety concerns, impacts on health ... and cleanup."

Becker vowed to hold the company to that pledge.

Johnson said a team was being flown to Utah to assess the damage. Also expected to arrive are representatives of the oil company's insurance carriers, who will begin contacting those affected by the leak.

State records indicate that an earlier leak on the 52-year-old pipeline occurred in February 2002. During that leak, blamed on corrosion, an estimated 207 barrels spilled. Damage was estimated at nearly \$318,000.

A leak also took place near Park City in August 2004. During that incident, the result of excavation damage, around 470 barrels leaked. That damage was pegged at \$442,000.

Sullivan said the pipeline must be inspected every five years. It was last checked in 2008. The U.S. Department of Transportation and the Environmental Protection Agency monitor the pipeline.

"The leak was on the downhill side," Sullivan said, "where some of the standard monitoring tools don't work as well as other monitoring tools."

Sullivan said he couldn't speculate on what caused the leak, but water corrosion usually is the culprit when pipes break.

The oil being transported on Chevron's pipeline was a medium-grade crude, which refers to how easily the oil flows. Light crude flows almost like water while heavy crudes are closer to the consistency of furniture wax, or petroleum jelly, and must be heated before they flow easily.

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